

Nickel

UDC 669.24.620.172.251.2

USSR

SOROKIN, V. G., BOGACHEV, I. N., VEKSLER, YU. G., LESNICKOV, N. P. and
FILIPPOV, M. A.

"Short-Time Creep of Nickel in a High-Velocity Air Stream"

Moscow, Metallovedeniye i termicheskaya obrabotka metallov, No 3, 1970, pp 2-5

Abstract: Short-time creep of nickel in a vacuum, in a medium at rest, and in a high-speed air stream ($M = 1.6$) was experimentally investigated at 700-800°C under a stress of 2-4 kg/mm². Experiments were conducted on samples made of technically pure NP-I nickel in an aerodynamic wind tunnel intended for investigating tensile strength, short-time creep, and erosion resistance metals and alloys, at high temperatures and at air stream velocities up to Mach 4. The magnitude of deformation and time were counted from the time of sample heating up to a given temperature. The heating time was 30±5 sec. The results show that at 700-800°C the creep resistance of technically pure nickel in air is higher than in vacuum. In a high-velocity air stream the creep increases sharply as a result of the corrosion-erosion effect of the air stream. 2 figures, 1 table, 7 references.

1/1

1/2 042 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--FORMATION AND STABILIZATION OF CHROMIUM V DURING THE RADIATION
CHEMICAL OXIDATION OF CHROMIC HYDROXIDE COPRECIPITATED WITH ZIRCONIUM
AUTHOR--(03)--LESNIKOVICH, A.I., SVIRIDOV, V.V., POZNYAK, A.L.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK BELORUSS. SSR 1970, 14(3), 240-2
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--RADIATION EFFECT, CHROMIUM COMPOUND, OXIDATION, HYDROXIDE,
ZIRCONIUM COMPOUND, ALUMINUM COMPOUND, RADIATION CHEMISTRY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3003/0866 STEP NO--UR/0250/70/014/003/0240/0242
CIRC ACCESSION NO--AT0129935
UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--04DEC70

2/2 042

CIRC ACCESSION NO--AT0129935

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. COPPTD. MIST. OF CR-IR OR CR-AL
HYDROXIDE GELS WERE INVESTIGATED AFTER IRRADN. BY A DOSE OF 10 PRIN7 R
AT ROOM TEMP. HIGH CR(IV) STABILIZATION OBSERVED MAY BE EXPLAINED BY A
SLOW DISPORPORTIONATION PROCESS IN COPPTD. HYDROXIDE. IMPERFECTION IN
THE HYDROXIDES STRUCTURE SUPPORTS THE EASE OF RADIATION CHEM. OXIDN. FO
CR(III) IONS. FACILITY: BELORUSS. GOS. UNIV. IM. LENINA, MINSK,
USSR.

UNCLASSIFIED

Veterinary Medicine

UDC 636.4:636.089

USSR

KOTOV, V. T., SHAKHOV, A. G., and LESNYKH, V. I., Voronezh Agricultural Institute imeni K. D. Glinka and All-Union Institute of Noninfectious Diseases of Farm Animals

"Colostrum Immunity and Its Role in Combined Prophylactic Vaccination of Swine Against Erysipelas, Aujeszky's Disease, and Leptospirosis"

Moscow, Doklady Vsesoyuznoy Ordena Lenina Akad.Sel'skokhoz. Nauk imeni V. I. Lenin, No 7, 1973, pp 23-25

Abstract: Pregnant sows were vaccinated 1 to 1 1/2 months before farrowing against Aujeszky's disease, erysipelas, and leptospirosis; suckling pigs were vaccinated against Aujeszky's disease and leptospirosis; weanling pigs were vaccinated at age 2 1/2 months against erysipelas and Aujeszky's disease; gilts age 4 and 7 months were vaccinated against erysipelas. More than a million animals received the polyvalent vaccines from 1968 to 1971 and the resulting immunity was as strong as that produced by monovalent vaccines. They had no adverse effects on the course of pregnancy and stimulated the formation of antibodies against all the antigens. The antibody titers in the colostrum of the pregnant sows was as high as or higher than in serum. Antibodies against all the antigens were also found in 20-to 30-day-old suckling pigs.

1/1

Acc. Nr:

AP0044695

Ref. Code: UA 0531

PRIMARY SOURCE: Khirurgiya, 1970, Nr 1, pp 24-28

CONSERVATIVE THERAPY OF OBLITERATING DISEASES
OF THE EXTREMITIES

G. D. Nazarov, G. P. Lesnyak

The authors depict the results of plethysnographic control of the character of changes of the arterial tone of the upper and lower extremities under the influence of parenteral administration of vasodilating agents, employed for the treatment of obliterating diseases. It was established that commonly there is observed regional dilatation of arterial channels: 7 types of vascular reactions are singled out. Not in all patients the employment of one and the same vasodilator causes a reduction of the arterial tone. The most rational is the selection of vasodilating agents which cause regional dilatation of arteries of the lower extremities. Prior to administration of the vasodilator it is necessary to estimate the individual reaction of the patient to this preparation.

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REEL/FRA
19771429

DI 02

LESNOY N.G.

Acc. Nr: AP0052335

REF. CODE: UR0238

PRIMARY SOURCE: Fiziologichnyi Zhurnal, 1970, Vol 16, No 1,
pp 14-23

EFFECT OF SOME HORMONES ON UROPEPSINE EXCRETION BY DOGS

S. G. Genes, N. G. Lesnoy

Institute of Endocrinology and Chemistry of Hormones, Kharkov,
Ukrainian Advanced Training Institute for Doctors, Kharkov

Summary

The effect of different non-hormonal substances was investigated on uropepsine excretion by healthy dogs for two hours. The urine was always taken in the morning on an empty stomach or after administration of substances. The uropepsine excretion was also studied in diabetic, adrenalectomized and hypophysectomized dogs.

REF/NAME

19820921

USSR

LESNYAK, A., Head of the Legal Advice Bureau of the Oblast' Council of Trade Unions, Dnepropetrovsk

"Such Conclusions Suggest Themselves ..."

Moscow, Trud, 19 Feb 72, p 2

Abstract: Several workers in the steel casting shop of the Dnepropetrovsk Press Plant developed vibration sickness. They were transferred to light work (and their wages were reduced), but they were not paid compensation on a par with that received by wounded workers, and no attempt was made to improve the working conditions which caused the disease. When questioned by trade union lawyers, the plant administration explained that it considered vibration sickness an insurance case, for which compensation was paid by the state. After a long hassle, during which the matter was referred to the State Committee on Questions of Labor and Wages of the Council of Ministers USSR, the plant was ordered to reimburse the workers for their wage losses, both current and past. S. Sergiyeni, former director of the plant, undertook sweeping reforms of working conditions -- but not until after it was explained to him that the workers' compensation would have to be charged to the prime cost of production until hazardous and unhealthful conditions had been eliminated.

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USSR

LESNYAK, A., Trud, 19 Feb 72, p 2

Compensation for pneumoconiosis, an occupational disease of miners, which usually occurs when basic health and safety rules are ignored, is now paid by the state. It is suggested that if the responsible mining enterprises had to reimburse stricken workers, they would soon make a serious effort to improve working conditions, and pneumoconiosis, could be virtually eliminated.

General

USSR

LESNYAK, A., Candidate of Biological Sciences

"The Computer in the Service of Ethology"

Tashkent, Pravda Vostoka, 1 Nov 70, p 3

Abstract: Ethology, the scientific study of animal behavior, is becoming increasingly popular in the USSR for both purely scientific and practical reasons. Considerable efforts are being made to adapt the computer to study the language of animals, with the ultimate aim of communication with monkeys, dolphins, birds, etc. Success would enable man to use animals, for example, in prospecting for valuable minerals. Another field with great potential which is being vigorously pursued in Uzbekistan is the study of the behavior of entomophages, i.e., insects that feed on other insects which are injurious to plants. It is hoped that the results will be useful in devising biological methods for controlling these pests. Modern ethology is a two-way street, for its accomplishments will benefit many animals as well. Computers with tracking and image-recognition devices will among other things, help to protect desirable species from their enemies through the use of warning signals.

1/1

Immunology

USSR

UDC 616.981.51-097.3-092.9.:599.323.4

SALTYKOV, R. A., ~~LESNYAK, O. T.~~ and ULANOVA, A. A., State Control Institute for Biomedical Preparations imeni Tarasevich, Moscow

"The White Mouse as an Immunological Model in Anthrax"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 8, 1971, pp 87-91

Abstract: Experiments were performed with random bred white mice to determine their suitability as an immunological model in anthrax. Active immunity was studied after single subcutaneous vaccination of the animals with live STI anthrax vaccine. Passive immunity was tested by injecting them subcutaneously with anti-anthrax serum or globulin derived from it. The results were analyzed by statistical methods. The mice were found to be useless as an experimental model for the evaluation of active postvaccinal immunity to anthrax. But vaccinated animals can be used to study specific passive immunity provided that they are inoculated with Tsenkovskiy's second vaccine (a suspension of spores from strain 71/12 which kills white mice in 24 to 72 hours). Earlier published reports on the subject are critically analyzed.

1/1

Immunology

USSR

UDC 615.371:576.851.511].036.8.078

LESNYAK, O. T., and SALTYSKOV, R. A., Control Institute of Medical Microbiological Preparations Imeni Tarasevich

"Comparison of the Immunogenicity of Anthrax Vaccine Strains"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 8, Aug 70.
pp 32-35

Abstract: The immunogenicity of live STI (Ginsburg) and 34-F-2 (Sterne) vaccine strains was tested by various methods in a series of experiments on guinea pigs. Both the method employed in the USSR and that recommended by the World Health Organization revealed only the qualitative characteristics of the strains, but were useful in distinguishing strains which were suitable for vaccination from those which were not. The authors' method of evaluating vaccine strains from the index of immunity in vaccinated guinea pigs makes it possible to obtain a quantitative characterization of the immunity produced by the various strains. Using this method, it was found that the STI strain produced significantly higher levels of immunity than did the 34-F-2 strain.

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1/2 012
UNCLASSIFIED
PROCESSING DATE--20NOV70
TITLE--CESIUM CHLORIDE-BARIUM CHLORIDE, RUBIDIUM, CESIUM, CHLORIDE-MERCURY
II CHLORIDE, POTASSIUM, RUBIDIUM, THALLIUM, CHLORIDE-NICKEL II CHLORIDE,
AUTHOR-(03)-BELYAYEV, I.N., LESNYKH, O.S., EYKENBAUM, I.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 846-8

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GRAPHIC TECHNIQUE, PHASE DIAGRAM, PHYSICAL CHEMISTRY PROPERTY,
THERMAL ANALYSIS, CESIUM CHLORIDE, BARIUM CHLORIDE, MERCURY COMPOUND,
POTASSIUM CHLORIDE, NICKEL CHLORIDE, COBALT CHLORIDE, THALLIUM CHLORIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1994/1716

STEP NO--08/0078/70/015/003/0846/0848

CIRC ACCESSION NO--AP0115543

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--2001/11/70

CIRC ACCESSION NO--AP0115543

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TITLE SYSTEMS WERE INVESTIGATED BY VISUAL POLYTHEMAL AND THERMOGRAPHIC METHODS AND BY PHYS. CHEM. ANAL. PHASE DIAGRAMS OF THE SYSTEMS ARE CONSTRUCTED AND EXPTL. DATA IS TABULATED. WITH THE EXCEPTION OF THE CSCL-BACL SUB2 SYSTEM, THE REMAINING SYSTEMS FORM ABCL SUB3 COMPOS. RBHCL SUB3 AND CSHCL SUB3 HAVE PEROVSKITE STRUCTURE AND KNICL SUB3, RBNICL SUB3, AND TLNICL SUB3 HAVE CSNICL SUB3-TYPE STRUCTURE. FACILITY: ROSTOV.-NA-DONU GOS. UNIV., ROSTOV-CN-DON, USSR.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--PHASE EQUILIBRIUMS IN SYSTEMS INVOLVING ALKALI METAL METABORATES
-U-
AUTHOR--(03)--LESNYKH, D.S., YEIKHENBAUM, I.G., CHERNYAKHOVSKAYA, S.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. NEORG. KHIM. 1970, 15(3), 824-8
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--TERNARY FLUID SYSTEM, PHASE EQUILIBRIUM, ALKALI METAL HALIDE,
BORATE, MELTING POINT, EUTECTIC
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1994/1375 STEP NO--UR/007B/70/015/003/0824/0828
CIRC ACCESSION NO--AP0115694
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0115694

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PHASE EQUIL. WERE DETD. IN THE MUTUAL TERNARY SYSTEMS LI PRIME POSITIVE, NA PRIME POSITIVE MAGNITUDE OF CL PRIME NEGATIVE, BO SUB2 PRIME NEGATIVE AND NA PRIME POSITIVE, CS PRIME POSITIVE MAGNITUDE OF BR PRIME NEGATIVE, BO SUB2 PRIME NEGATIVE AND PROJECTIONS OF THEIR PHASE DIAGRAM ARE GIVEN. THE DIAGONAL SECTIONS OF LI PRIME POSITIVE, NA PRIME POSITIVE MAGNITUDE OF CL PRIME NEGATIVE, BO SUB2 PRIME NEGATIVE, OF NA PRIME POSITIVE, CS PRIME POSITIVE MAGNITUDE OF BR PRIME NEGATIVE, BO SUB2 PRIME NEGATIVE, OF NA PRIME POSITIVE (K PRIME POSITIVE, RB PRIME POSITIVE, CS PRIME POSITIVE) MAGNITUDE OF CL PRIME NEGATIVE, BO SUB2 PRIME NEGATIVE, OF NA PRIME POSITIVE (K PRIME POSITIVE, RB PRIME POSITIVE) MAGNITUDE OF BR PRIME NEGATIVE, BO SUB2 PRIME NEGATIVE, AND OF NA PRIME POSITIVE (K PRIME POSITIVE, RB PRIME POSITIVE) MAGNITUDE OF I PRIME NEGATIVE, BO SUB2 PRIME NEGATIVE ARE PRESENTED. SUBSTITUTION OF LESS POLARIZABLE FOR A MORE POLARIZABLE ION IN THESE SYSTEMS CAUSES PHASE SEPN. AND M.P. OF 14 EUTECTICS OF THESE SYSTEMS ARE GIVEN.

UNCLASSIFIED

1/2 009 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--COMPLEXING IN KCL, MCL SUB2, H SUB2 O TERNARY WATER SALT SYSTEMS, M
IS MANGANESE, NICKEL, COBALT -U-
AUTHOR-(02)-EYKHENBAUM, I.G., LESNYKH, D.S.
COUNTRY OF INFO--USSR
SOURCE--ZH. NEORG. KHIM. 1970, 15(2), 516-19
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ISOTHERM, AQUEOUS SOLUTION, POTASSIUM CHLORIDE, WATER, NICKEL
CHLORIDE, COBALT CHLORIDE, MANGANESE CHLORIDE, COMPLEX COMPOUND
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1992/1612 STEP NO--UR/0078/70/015/002/0516/0519
CIRC ACCESSION NO--AP0112606
UNCLASSIFIED

2/2 009

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0112606

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOLY. ISOTHERMS ARE CONSTRUCTED FOR KCL-MCL SUB2-H SUB2 O SYSTEMS, WHERE M EQUALS NI, CO, OR MN. THE SYSTEMS OF NICKL SUB2 AND COCL SUB2 ARE SIMPLE EUTONIC SYSTEMS BUT THE MNCL SUB2 SYSTEM FORMS THE INCONGRUENTLY SOL. KMNCL SUB3 .H SUB2 O.

UNCLASSIFIED

LESOGOR, L.V.

NR 57914
5 Jan 73

- 1 -

[1 - USSR - C]

Peripheral auditory adaptation is manifested in a partial decline of the pulse frequency in auditory nerve fibers during a signal of constant amplitude [14, 16] and in the inhibition of the reaction to the test stimulus, which is manifested after the completion of the influencing sound -- the masking response, fed from the sound window of the auditory nerve index of the reaction [5, 9-11, 13]. The decrease in the reaction is expressed increases with an increase in the duration of the masker [9] and decreases with an increase in the interval between the masker and the test stimulus [5, 10, 15].

The methods of a psychoneurological experiment that satisfies the requirements for measuring peripheral auditory adaptation are described. The relations of the test stimulus detection threshold to the duration of the masking sound are determined. The results show that distinction should be made between fast and slow components in the adaptation effect. The processes related to the fast component are established during the first 50-70 msec of stimulation; the slow component is clearly expressed only at high sound intensities. The data agree with the results of electrophysiological studies of peripheral auditory adaptation.

Article by L. V. Lesogor, Institute of Speech Physiology, V. A. Bekasov, director of the Institute of Speech Physiology, and M. V. Lesogor, all of the Institute of Physiology, Acad. I. P. Pavlov of the USSR Academy of Sciences, Leningrad; Leningrad, Psichologicheskii Zhurnal, USSR, Russian, No 10, 1972, pp 1313-1317.

STUDY OF PERIPHERAL AUDITORY ADAPTATION
IN A PSYCHONEUROLOGICAL EXPERIMENT

UDC 613.11

UDC 579.14
5 January 1973

USSR

UDC 519.442

LESOKHIN, M. M., Leningrad

"Characters of Commutative Semigroups, I"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy -- Matematika, No. 8, Aug 70,
pp 67-74

Abstract: Let K be a multiplicative semigroup consisting of all complex numbers modulus 1 and zero, and let A be an arbitrary commutative semigroup. $\text{Hom}(A, K)$ denotes the set of all homomorphisms of A into K . $\text{Hom}(A, K)$ forms a commutative semigroup relative to pointwise multiplication which is ordinarily called a semigroup of complex characters of the semigroup A . The article describes the structure of the semigroup $\text{Hom}(A, K)$ for an arbitrary commutative semigroup A , explains the interrelationship between properties of the semigroup A and the semigroup of characters, and gives the abstract characteristics of semigroups $\text{Hom}(A, K)$.

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12 811

UNCLASSIFIED

PROCESSING DATE--020CT70

TELE--APPARATUS FOR PURIFYING STEAM GAS DISCHARGES -U-

THOR-(05)-MAKSIMOV, V.F., TOFF, A.I., ISYANOV, L.M., PASECHNIK, S.P.,
LESOKHIN, V.B.

COUNTRY OF INFO--USSR

SOURCE--BUH. PROM. 1970, (2) 20-1

TE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

PIC TAGS--SULFUR, INDUSTRIAL FURNACE, AIR POLLUTION CONTROL, AIR
PURIFICATION EQUIPMENT, STEAM BOILER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1989/1372

STEP NO--UR/0329/70/000/002/0020/0021

ARC ACCESSION NO--AP0107845

UNCLASSIFIED

2/2 011

UNCLASSIFIED

PROCESSING DATE--02OCT70

IRC ACCESSION NO--AP0107345

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WHEN THE SMELT FROM A SODA RECOVERY FURNACE IS DISSOLVED (IN WEAK WHITE LIQUOR), A CONSIDERABLE AMT. OF A MIXT. OF STEAM AND GAS IS EVOLVED. THE MIXT. IS DISCHARGED INTO THE ATM. THROUGH AN EXHAUST PIPE AND CONTAINS SOLID PARTICLES ENTRAINED BY THE FLOW, WHICH CAUSE POLLUTION. THE APP. DESCRIBED WAS DESIGNED TO PURIFY THE MIXT. FROM THE ENTRAINED PARTICLES AND ALSO FROM GASEOUS S COMPONENTS. FROM THE TANK CONTG. THE SOLN., THE STEAM GAS MIXT. GOES TO A SCRUBBER CONSISTING OF A MIXING TUBE AND A GRAVITY CONDENSATE TRAP. THE WEAK WHITE LIQUOR FROM THE CAUSTICIZATION ROOM IS PUMPED, AT 1.5-2 BARS, INTO THE LOWER CONE OF THE CONDENSATE TRAP, WHERE THE LIQUOR USED FOR SPRAYING THE MIXING TUBE ALSO COLLECTS. THE LIQUOR FED IS CONTROLLED BY VALVES, AND A DEFINITE VOL. OF WEAK WHITE LIQUOR CIRCULATES CONTINUOUSLY THROUGH THE APP. THE APP. REMOVES 95PERCENT OF THE SOLID PARTICLES, AND NEARLY 100PERCENT OF THE S COMPS.

USSR

UDC 632.4:582.285.2:581.17

LESOVOY, M. P., SHELEKHOVA, L. N., and KONDRATYUK, G. K., Ukrainian Scientific Research Institute for Plant Protection, Kiev

"Chemical Composition of Germinating Uredospores of *Puccinia triticina* Races Differing in Virulence"

Leningrad, Mikologiya i Fitopatologiya, Vol. 7, No 5, 1973, pp 437-440

Abstract: The chemical composition of the germinating uredospores of two races of *Puccinia triticina* (race 77 -- aggressive, and race 52 -- less aggressive) were determined at 22° to 24° on a susceptible wheat strain Erythrosperrum-15. Analysis of the results showed that total nitrogen content and free amino acid concentration was significantly greater in race 52 uredospores. Peroxidase activity was detected only in resting spores. In race 77 peroxidase activity was three-fold less than in the less virulent race 52. The relationship with respect to catalase was reversed. RNA and DNA phosphorus content in race 77 was much greater than in race 52. On germination the content of each of the above mentioned chemical entities decreases; the decrease in protein nitrogen and free amino acids was less pronounced in race 77 than in race 52.

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- 84 -

Plant Pathology

USSR

UDC 632.4:582.245.2:633.11:581.14

LESOVOY, M. P., and ZRAZHEVSKAYA, T. G., Ukrainian Research Institute for
Plant Protection, Kiev

"Histologic Features of the Development of *Puccinia triticina* Briks. Strain
77 in Wheats Differing in Resistance"

Leningrad, Mikologiya i Fitopatologiya, Vol 7, No 4, 1973, pp 322-327

Abstract: Studies were conducted on the development of the fungus *Puccinia triticina* 77 on susceptible and resistant wheats. While the initial stages of infection in both cases were similar, histologic studies showed that with the development of haustoria there were differences in the resistant and susceptible wheat variants. In the former the cells died and formed a barrier around the pathogen, although living hyphae were found on careful examination 5 to 7 days after infection. The haustoria formed in the resistant wheat cells are largely underdeveloped and defective, and in the resistant wheat the fungus is unable to form reproductive organs. A significant difference in the resistant wheat cells is irregular thickening of the cell wall on the 8 to 10th postinfection day; such areas of thickening may range from 2 to 30 and vary in size from 1.7 to 30 μ . Such cells are most frequently encountered in mesophyll tissues and their significance has not been satisfactorily explained.

171

Plant Pathology

UDC 632.4:633.11:582.285.2 (47+47)

USSR

LESOVOY, M. P., FEDOROVA, V. A., SHKOLENKO, V. I., TERESHCHENKO, B. A.,
SHOPINA, V. V., IBRAGIMOV, G. R., AGMEDOV, S. A., YEROGONZA, H. I.,
MAMONTOVA, A. N., PERESYPKIN, V. F., BOYKO, Yu. I., SHAVANINA, T. A.,
CHUMAKOV, A. Ye., YAREMENKO, Z. I., PAYCHADZE, L. V., and EL'CHILBAYEV, A. A.,
All-Union Institute of Plant Protection, Ukrainian Institute of Plant
Protection, Ukrainian Agricultural Academy, Azerbaijanian Institute of Agricul-
ture, Central Asian Institute of Plant Pathology, and Kazan' Institute of
Plant Protection, Georgian Institute of Plant Pathology

"Race Formation in *Puccinia triticina* Eriks. and *P. striiformis* West. in the
USSR"

Leningrad, Mikologiya i Fitopatologiya, No 6, 1972, pp 428-434

Abstract: Study of the causative agents of orange leaf and stripe rusts of
wheat in different parts of the Soviet Union and some other European countries
showed that, despite the great variety of races, only a few are responsible for
epiphytotics. The main races are fairly constant from year to year. This
stabilization is due to the fact that more than 90% of all the regionalized
wheat varieties in the USSR are susceptible to all races of the pathogens. The
racial composition of the pathogens in the USSR is similar to that occurring
elsewhere in Europe because of the exchange of original forms and use of the
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USSR

LESOVOY, M. P., et al., Mikologiya i Fitopatologiya, No 6, 1972, pp 428-434

same components in breeding wheat varieties. The appearance of new races and biotypes and changes in their virulence are the result of mutation, heterokaryosis, resistant varieties, and sexual hybridization.

2/2

71

USSR

UDC 531.383

LESTEV, A.M., and ROMANOVA, A.V., Leningrad Institute of Aviation Instrument
Manufacture

"Gyrostabilizer Error Under Random Vibration"

Leningrad, Priberostroyeniye, No 4, 1971, pp 70-74

Abstract: A study was made of errors of a single-axis gyrostabilizer, under random vibration, due to a moment caused by frictional forces in bearing axes. The mathematical probability and variance of the stabilization angle was determined by the statistical linearization method. Equations were established for a gyroscopic stabilizer having a two-phase asynchronous stabilization motor and an angle transducer with linear characteristics. Relationships were established for relative positional angles, turning moments, damping coefficients, motor and reducer constants, and the moment due to frictional forces in the stabilization axes. A numerical example illustrated that errors due to frictional forces during vibration can reach significant levels. It was suggested that this fact should be considered when choosing parameters for gyroscopic stabilization systems.

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USSR

UDC 531.383

IPSTEY, A. M. Leningrad Institute of Aviation Instrument Construction

"Oscillations and Drifts of an Unbalanced Gyroscope in Gimbals With a Damping System"

Leningrad, Priborostroyeniye, No 1, 1971, pp 74-78

Abstract: The article deals with the oscillations and drifts of a gyroscope in gimbals, the frame of which is connected with an immovable base by elastic dampers. It is shown that dynamic unbalancing of the rotor brings about oscillations of the Cardan rings and frame of the instrument, which brings about additional drifts of the figure axis. One figure, 5 bibliographic entries,

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USSR

UDC: none

BIBIKOV, YU. N. and LESTEV, A. M. (Leningrad)

"Gyroscope Stabilizer Oscillations"

Moscow, Prikladnaya Matematika i Mekhanika, Vol. 34, No. 2, 1970, pp 380-384

Abstract: This article is a study of a system of third-order differential equations describing the motion of a single-axis gyroscopic stabilizer with a floating integrating gyroscope. Control of the motor for the stabilizer is the responsibility of a switching device with a certain insensitivity zone. It is shown that for a small insensitivity zone, the system has a closed trajectory corresponding to self-oscillations of the gyroscope stabilizer. The phase space region in which the closed trajectory is contained is indicated. The author asserts that in the theory of gyroscopic devices in which self-oscillatory modes are used, special attention must be given to clarification of the conditions and to proof of the existence of such closed trajectories.

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- 98 -

1/2 019 UNCLASSIFIED PROCESSING DATE--02 OCT 70
TITLE--DYNAMIC ERRORS OF ELECTRIC MEASUREMENT DEVICES DURING VIBRATION OF
THE FOUNDATION -U-
AUTHOR-(02)-KOZYNNCHENKO, I.V., LESTEV, A.M. L
COUNTRY OF INFO--USSR
SOURCE--IZVUZ PRIBUROSTROENIE, VOL. 13, NO 2, 1970, P. 16-20
DATE PUBLISHED-----70

SUBJECT AREAS--METHODS AND EQUIPMENT, PHYSICS
TOPIC TAGS--ELECTRIC MEASURING INSTRUMENT, VIBRATION ANALYSIS,
DIFFERENTIAL EQUATION, VIBRATION TEST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1991/0141

STEP NO--UR/0146/70/013/002/0016/0020

CIRC ACCESSION NO--AP0110107

UNCLASSIFIED

2/2 G19

UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0110107
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. INVESTIGATION OF THE THREE
DIMENSIONAL VIBRATIONS OF THE FRAME OF AN ELECTRIC MEASUREMENT DEVICE
ELASTICALLY SUSPENDED BY TENSION. ATTENTION IS GIVEN TO DYNAMIC
DISPLACEMENTS OF THE FRAME FROM THE POSITION OF STATIC EQUILIBRIUM
DURING THREE COMPONENT POLYHARMONIC VIBRATIONS OF THE FOUNDATION.
DIFFERENTIAL EQUATIONS ARE DERIVED, DESCRIBING THE VIBRATION OF THE
FRAME ABOUT THE POSITION OF STATIC EQUILIBRIUM. IT IS SHOWN THAT THE
VIBRATIONS CAN LEAD TO SERIOUS ANGULAR DISPLACEMENTS, RESULTING IN
CONSIDERABLE MEASUREMENT ERRORS. FACILITY: LENINGRADSKII
INSTITUT AVIATIONNOHO PRIBOROSTROENIIA, LENINGRAD, USSR.

UNCLASSIFIED

Acc. Nr:

AP0049171

Abstracting Service:
CHEMICAL ABST. 5/70

Ref. Code:

480080

104465h Physicochemical properties of isomeric alkylidioxanes. IV. Lesteva, T. M.; Ogorodnikov, S. K.; Nebylova, E. M.; Morozova, A. I. (USSR). *Zh. Prikl. Khim. Leningrad* 1970, 43(1), 150-1 (Russ). Phase equil. data were tabulated for systems of 4,4-dimethyl-1,3-dioxane, the 4-Et analog, and the 4,5-di-Me analog. The equil. of liq.-vapor in these followed Raoult's Law. Mixts. of these formed ideal systems. With H₂O, azeotropes were formed with the following b.p. and wt. % content of the nonaq. component shown: 4,4-Me₂, 92.85°, 64.8; 4-Et, 92.6°, 70.9; and 4,5-Me₂, 91.9°, 62.2%.
G. M. Kosolapoff

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REEL/FRAME
19800978

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USSR

UDC 576.8:577

LESTROVAYA, N. N.

"Cell Division, Subcellular Particles, and Macromolecules in Two-Phase Polymer Systems"

Uspekhi Mikrobiologii, pp 226-239

Abstract: This review is devoted to the method of separating high-molecular-weight substances and particles of biological origin in two phase polymer systems. When mixing aqueous solutions of some water-soluble polymers taken in comparatively small concentrations, a division of the system into phases occurs. Each phase contains both polymers, but in different ratios. Both nonionic polymers and polyelectrolytes may be used as components of such systems. A high water content (85-90%) in both phases and the inertness of the polymers reduces the danger of denaturation. The nature of the distribution of biopolymers and particles is determined by the properties of the material being analyzed and the properties of the system. By changing the latter (ion composition pH, nature and concentration of polymers, etc.) it is possible to influence the nature of the distribution. A relatively slight difference in the composition of the two phases causes an even distribution between phases of

778

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- 75 -

USSR

LESTROVAYA, N. N., Uspekhi Mikrobiologii, pp 226-239

substances with low molecular weight, while high-molecular weight substances and particles concentrate themselves, to a greater or lesser extent, in one of the phases or between the phases. Large molecules or, especially, particles, sometimes exhibit such varied behavior in these two-phase systems that effective fractionating can be achieved with one treatment. However, most often multistep treatment using the principle of reflux distribution is used to fully divide the components of a complex mixture. Complex mixtures of proteins, nucleic acids, subcellular particles, viruses, and entire cells have been fractionated using the method described. Two-phase polymer systems offer extensive opportunities, not only in the area of working out effective methods of fractionation. For example, using specially selected systems, it has proved possible to concentrate viruses 100-fold. The method is also very promising as the basis for increasing the sensitivity of serological reactions, studying taxonomic and serological similarity in micro-organisms, accumulating biologically active products of vital activity during culturing of micro-organisms, and solving a large number of other special tasks in the areas of bioorganic chemistry, biochemistry, microbiology, and related fields of research.

2/2

USSR

LETAVET, A. A., and BURYKINA, L. N., Editors, Academy of Sciences USSR

"Materials on the Toxicology of Radioactive Substances"

Materialy po toksikologii radioaktivnykh veshchestv [English version above], Moscow, Meditsina, Vyp. 8, 1972, pp 248, illustrations, 1 ruble 29 kopecks (from Referativnyy Zhurnal -- Biologicheskaya Khimiya, No 5, 1973, Abstract No 5F2297K by D. G.)

Translation: This collection presents data on the kinetics of ^{131}I metabolism in the organisms of experimental animals as influenced by their age and previous total body irradiation, and on the biological effects of ^{131}I (including effects on the nervous, cardiovascular, generative, hemopoietic and other systems, iodine uptake by the thyroid gland, and toxic effects on the embryo.

1/1

Pharmacology and Toxicology

U33R

Editors -- Professor LETAVET, A. A. and Doctor of Medical Sciences Professor
SANOTSKIY, I. V.

Printsipy i Metody Ustanovleniya Predel'nykh Dopustimyykh Kontsentratsiy
Vrednykh Veshchestv v Vozdukh Proizvodstvennykh Pomesheniy. Materialy Mezh-
dunarodnogo Seminara Uchenykh Sotsialisticheskikh Stran 25-29 Noyabrya 1968.
(Principles and Methods of Establishing Maximum Allowable Concentration of Toxic
Substances in the Air of Industrial Premises. Data on the International
Seminar of Scientists of Socialist Countries held 25-29 November 1968), Moscow,
"Meditsina," 1970, pp 204-205

Translation:

Table of Contents:

	<u>Page</u>
LETAVET, A. A. "Introduction"	3
PIOTROVSKIY, Ye. "Expositional Tests and the System of Maximum Allowable Concentrations of Toxic Substances in the Environmental Air of Industrial Enterprises"	5
LYUBLINA, Ye. I. "Concerning Computing Methods of Oriented Identification of Toxic Substances"	16
ZAYEVA, G. N. and KULAGINA, N. K. "Express Methods of Establishing Maximum Allowable Concentrations"	24

1/4

USSR

Editors -- LETAVET, A. A. and SANOTSKIY, I. V., "Meditsina," 1970, pp 204-205

SANOTSKIY, I. V. "Problem of Toxicity Criterion. Nonspecific and Specific Reactions, and Integral and Pathogenic Criteria in Establishing Action Thresholds of Occupational Poisons	35
ARKHIPOVA, A. G. and PAVLOVA, I. V. "Biochemical Investigation in Toxicity Study of Chemical Substances"	41
KAGAN, Yu. S. "Accumulation, Criteria and Methods, Its Assessment, and Prognostigation of Chronic Intoxications"	49
ULANOVA, I. P. "Hazard Extent of Industrial Substances, Species Sensitivity, and Margin Coefficient in Establishing Maximum Allowable Concentrations"	65
ZAUGOL'NIKOV, S. D., LOYT, A. O., and IVANITSKIY, A. M. "Toxicological and Hygienic Classification of Toxic Substances"	76
VELICHKOVSKIY, B. T. and LATUSHKINA, V. B. "Maximum Allowable Concentration of Fibrogenic Action Aerosols"	83
MEDVED', L. I. and SPYNU, Ye. I. "Principles and Characteristics of Hygienic Standardization of Pesticides"	95
SANOTSKIY, I. V., TIMOFEYEVSKAYA, L. A., and FOMENKO, V. N. "Maximum Allowable Concentration of Elastomogens -- Substances with Genetic Activity"	98

2/4

- 83 -

USSR

Editors -- LETAVET, A. A. and SANOTSKIY, I. V., "Meditsina," 1970, pp 204-205

ALEKSEYEVA, O. G. and SHUMSKAYA, N. I. "Standardization Principles of Chemical Allergens"	111
KORRAKOVA, A. I., IVANOV, N. G. and KHEMEEVA, S. N. "Maximum Allowable Concentration of Mixtures of Substances"	120
VOLKOVA, Z. A. "On the Problem of Substantiating Maximum Allowable Concentrations of Toxic Substances in the Air of Industrial Premises by Comparing Working Conditions and the State of the Workers' Health"	130
ROSHCHIN, A. V. and SANOTSKIY, I. V., "Basic Unifying Trends in Substantiating Maximum Allowable Concentrations of Toxic Substances in the Working Zone Air"	137
KOLOYANOVA-SIMEONOVA, F. "Working Experience of the People's Republic of Bulgaria with the Establishment of Maximum Allowable Concentrations of Toxic Substances in the Air of Industrial Premises"	143
BORDASH, Sh. "Investigations Substantiating Maximum Allowable Concentrations of Industrial and Agricultural Toxic Substances in Hungary"	150
KALE, Z., GRUND, V., and SCHMIDT, P. "Labor Hygienic and Toxicological Norms in the Light of Complex Socialist Rationalization"	158

3/4

USSR

Editors -- LETAVET, A. A. and SANOYSKIY, I. V., "Meditsina," 1970, pp 204-205

FOL'BRECHT. "Practical Experience with the Application and Control of Hygienic Norms Adopted by the Ministry of Health of the German Democratic Republic for Berlin's Industrial Enterprises" 165

NOFER, Ye. and ZVEZHKOVSkiY, Z. "Experience with the Application of Maximum Allowable Concentrations (PDK) in Poland" 170

BERNARD BARKHAD. "Our Experience with the Determination of the Range of Maximum Allowable Concentrations of Toxic Substances in the Air of a Working Zone" 175

POPOVICH, S. "Methods of Establishing Maximum Allowable Concentrations of Toxic Elements in the Atmosphere of Industrial Premises and Industrial Districts in Yugoslavia" 181

PRPICH-MAYICH, D. "Correlation of Deltaaminolevulinic Acid (AKL) Concentrations in Urine and Lead Concentrations in the Air of Industrial Premises" 186

4/4

- 81 -

1/2 016 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--DEVELOPMENT OF APPROACHES TO RADIOLOGICAL PROTECTION -U-
AUTHOR-(04)-LETAVET, A.A., DIBOBES, I.K., TEVEROVSKIY, YE.N., TERMAN, A.V.
COUNTRY OF INFO--USSR L
SOURCE--MOSCOW, AKADEMIYA NAUK SSSR ATOMNAYA ENERGIYA, VOL 23, NO 3, MAR
70, PP 225-231
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--RADIOLOGY, RADIATION PROTECTION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1386 STEP NO--UR/0089/70/028/003/0225/0231
CIRC ACCESSION NO--A70123766
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0123736

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. A REVIEW IS MADE OF THE APPROACHES TO RADIOLOGICAL SAFETY USED BY THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION (ICRP) FROM ITS INCEPTION IN 1928 TO THE PRESENT. THE REVIEW IS BASED ENTIRELY ON THE RECOMMENDATIONS AND PUBLICATIONS OF I.C.R.P. AND DOES NOT CONTAIN ANY NEW MATERIAL. THE AUTHORS STATE THAT THE NATIONAL COMMISSION ON RADIOLOGICAL PROTECTION OF THE MINISTRY OF HEALTH USSR IS CONSTANTLY REVIEWING RADIOLOGICAL SAFETY STANDARDS AND ENDEAVORING TO BRING SOVIET PRACTICE INTO CONFORMITY WITH THE RECOMMENDATIONS OF I.C.R.P. AND WITH THE STANDARDS OF THE INTERNATIONAL ATOMIC ENERGY AGENCY. THE REVISED USSR STANDARDS ON RADIOLOGICAL PROTECTION ARE SCHEDULED FOR PUBLICATION IN 1970.

UNCLASSIFIED

USSR

UDC 621.019.98

LETAVET, A. A., DIBOBES, I. K. TEVEROVSKIY, YE. N., and TERMAN, A. V.

"Development of Approaches to Radiological Protection"

Moscow, Akademiya Nauk SSSR, Atomnaya Energiya, Vol 28, No 3, Mar 70, pp 225-231.

Abstract: A review is made of the approaches to radiological safety used by the International Commission on Radiological Protection (ICRP) from its inception in 1928 to the present. The review is based entirely on the recommendations and publications of I.C.R.P. and does not contain any new material. The authors state that the National Commission on Radiological Protection of the Ministry of Health USSR is constantly reviewing radiological safety standards and endeavoring to bring Soviet practice into conformity with the recommendations of I.C.R.P. and with the standards of the International Atomic Energy Agency. The revised USSR standards on radiological protection are scheduled for publication in 1970. Orig. art. has: 10 references.

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III. Mathematical Cybernetics
A. Theory of Controlling Systems

USSR

GLUSHKOV, V. M. and LETICHEVSKIY, A. A.

"Theory of Discrete Converters"

Izbr. Vopr. Algebry i Logiki. [Selected Problems of Algebra and Logic -- Collection of Works], Novosibirsk, Nauka Press, 1973, pp 5-59 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V365)

Translation: A review based on the works of the authors. A definition is given of a discrete information converter, many examples of discrete converters are presented (Turing machines, normal Markov algorithms, logic systems of algorithms, computers, etc.). A special algebraic apparatus is suggested, allowing rather deep equivalent transforms of discrete converters. The problem of the equivalence of discrete converters is studied.

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USSR

YERSHOV, A. P., KOTOV, V. Ye., LETICHEVSKIY, A. A., PODLOVCHENKO, R. I.,
POTTOSIN, I. V., TRAKHTENBROT, V. A., FUKSMAN, A. L. and TSEVTIN, G. S.

"Theoretical Programming in the USSR (All-Union Symposium on Programming
Theory, Tsvetodubovo, 1-10 March 1972)"

Sistemnoye i Teor. Programirovaniye [Systems and Theoretical Programming --
Collection of Works], Novosibirsk, 1972, pp 9-89 (Translated from Referativnyy
Zhurnal Kibernetika, No 9, 1973, Abstract No 9V642).

Translation: This article is a collective report of the chairmen of the
thematic sections of an All-Union symposium on programming theory held
1-10 March 1972 near Leningrad. Although only factual material discussed
at the symposium is presented, this publication rather objectively charac-
terizes the status of theoretical programming in the USSR. The work of the
symposium consisted of a series of thematic sessions and discussion. The
following sessions were in operation (each followed by the name of the
chairman): 1. Equivalence and Conversion of Program Plans (A. A. Letichev-
skiy); 2. Yanov Plans and Their Generalization (R. I. Podlovchenko); 3.
The Grammars of Programming Languages (A. L. Fuksman); 4. Base and Semantic

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USSR

Yershov, A. P., Kotov, V. Ye., Letichevskiy, A. A., Podlovchenko, R. I., Pottosin, I. V., Trakhtenbrot, V. A., Fuksman, A. I., and Tseytin, G. S., *Sistemnoye i Teor. Programirovaniye*, Novosibirsk, 1972, pp 9-89.

Languages (A. P. Yershov); 5. Parallel Programming (V. Ye. Kotov); 6. Optimization of Programs (I. V. Pottosin); 7. Complexity of Algorithms and Algorithmic Power (G. S. Tseytin).

The session was opened by a speech of introduction by the chairman, followed by 20-30 minute reports by the participants and, generally, finishing up with animated discussion. The publication is a combination of the reviews of each of the thematic sessions of the symposium, prepared by the chairman of the sessions on the basis of author's abstracts of the reports.

In addition to this, a discussion on the subject of "Programming Theory and Other Sections of Mathematics," chaired by B. A. Trakhtenbrot, is described, as well as the results of statistical processing of questionnaires passed out to the participants of the symposium, reflecting their views on the role of programming theory in general and the significance of individual sections of this theory.

M. Gorbunov-Posudov

USSR

UDC 51:621.391

LETICHEVSKIY, A. A.

"Equivalence of Automata Relative to Semigroups"

Kiev, Teor. kibernetika--Sbornik (Theoretical Cybernetics -- Collection of Works), No 6, 1970, pp 3-71 (from Referativnyy Zhurnal -- Matematika, No 6, June 71, Abstract No 6V420)

Translation: Problems of the equivalence of automata relative to semigroups with contraction are examined. The first three sections of the article discuss the problem of equivalence relative to groups. Here the technique of traces developed in the theory of the complexity of Turing calculations and its generalizations is employed. The fourth section proves the theorem of the reducibility of the equivalence problem for semigroups with contraction to the problem of equivalence relative to its maximum subgroup.

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USSR

UDC 681.3.06:51

GLUSHKOV, V. M., KOSTYRKO, V. F., LETICHEVSKIY, A. A., ANUFRIYEV, F. V.,
SEL'DEROV, Z. M.

"A Language for Recording Formal Theories"

Teor. Kibernetiki. vyp. 3 [Theory of Cybernetics, No 3 -- Collection of Works],
Kiev, 1970, pp 4-31, (Translated from Referativnyy Zhurnal, Kibernetika, No 6,
1971, Abstract No 6 VS91 by V. Mikheyev).

Translation: A version is suggested of the first portion of a formal language, YaP for recording of mathematical theorems and their proofs -- language YaT for recording of formal theories. It is noted that the second portion of the YaP language -- language YaA for recording of algorithms for transformation of numerical and non-numerical information -- will be presented in a later article. YaT includes means taken from the language of narrow predicate calculus with equalities and functional variables, a language of expanded calculus, the language of set theory, as well as certain special devices. The syntax of the language, structure of the formalized mathematical text, symbols representing subjects, objects and structural functions are described in detail. The rules for usage of language YaT are presented.

USSR

UDC 51:621.391

LETICHEVSKIY, A. A.

"Equivalence of Automata Relative to Semigroups"

Teor. Kibernetiki. vyp. 6 [Theory of Cybernetics, No 6 -- Collection of Works], Kiev, 1970, pp 3-71, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V420).

Translation: Problems of the equivalence of automata relative to semigroups with contraction are studied. The first three sections study the problem of equivalence relative to groups. The technique of wakes, developed in the theory of complexity of Turing calculations, and its generalizations are used here. In the fourth section, a theorem on the convergence of the problem of equivalence for a semigroup with contraction to the problem of equivalence relative to its maximum subgroup is proven.

1/2 020 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--PROBLEMS ON AUTOMATION OF COMPUTER AND SYSTEM DESIGN -U-
AUTHOR-(03)-GLUSHKOV, V.M., KAPITONOVA, YU.V., LETICHEVSKY, A.A.
COUNTRY OF INFO--USSR
SOURCE--AUTOMATICA (GB), VOL. 6, NO. 2, P. 333-42, MARCH 1970
DATE PUBLISHED----MAR70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--AUTOMATIC COMPUTER PROGRAMMING, COMPUTER AIDED DESIGN,
COMPUTER DESIGN, COMPUTER TECHNOLOGY, ALGORITHM
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/0106 STEP NO--UR/0000/70/006/002/0333/0342
CIRC ACCESSION NO--AP0123878

UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123878

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. IT IS NOTED THAT COMPLETE SYNTHESIS OF COMPUTER DESIGN IS FEASIBLE AND CONSIDERABLE PROGRESS HAS BEEN MADE IN THIS DIRECTION, BUT IT IS NOT YET PRACTICAL. DIFFICULTIES AND COMPLEX PROBLEMS REMAIN AND THEY ARE DISCUSSED ALONG WITH THE BASIC DESIGN STAGES WHICH ARE DESIGNATED SYSTEM, LOGICAL AND TECHNICAL, LANGUAGE PROBLEMS ARE CONSIDERED AS WELL AS PROGRAMS WHICH HAVE BEEN DEVELOPED IN THE INSTITUTE OF CYBERNETICS IN KIEV FOR DESCRIBING COMPUTER MODELS AND COMPUTER STRUCTURES IN THE SYSTEM AND LOGICAL STAGES OF DESIGN. OPTIMIZATION PROBLEMS IN COMPUTER SYNTHESIS ARE COMPLEX AND OPTIMIZATION MUST BE DONE ON A SUBSYSTEM, SUBOPTIMAL BASIS AT THE PRESENT TIME ALTHOUGH RECENTLY DEVELOPED SPECIAL ALGORITHM TRANSFORMATIONS AND MICRO PROGRAMS HAVE BEEN FOUND VERY USEFUL. FINALLY, VARIOUS STEPS AND PROBLEMS WHICH MUST BE ENCOUNTERED IN AN AUTOMATED DESIGN SYSTEM ARE DEFINED, AND DISCUSSED. EXAMPLES ARE GIVEN IN APPENDICES TO ILLUSTRATE VARIOUS CONCEPTS WHICH ARE REPRESENTED IN THE PAPER.

UNCLASSIFIED

USSR

UDC 621.382.535.376

GUREVICH, I.M., NOVIKOVA, G.M., PYATNITSKAYA, G.A., IL'INSKIY, A.A.,
LETICHEVSKIY, YE.A.

"Investigation Of Gallium-Phosphide Light-Emitting Diodes And Development Of
Laboratory Generator Of Short Light Pulses"

V sb. Impul's. fotometriya (Pulse Photometry--Collection Of Works), Issue 2,
Leningrad, "Mashinostroyeniye," 1972, pp 144-147 (from RZh:Elektronika i yeye
primeneniye, No 9, Sept 1972, Abstract No 98311)

Translation: The paper investigates GaP light-emitting diodes in a pulse regime
($\tau = 100$ nanosec) with a pumping current of 1.2 A. The luminous efficiency of
the diffusion diodes amounts to 5×10^{-3} lm/sec/Joule and the epitaxial $0.35 \times$
 10^{-3} lm/sec/Joule. A pulse generator (IGS-1) was developed for the supply of
light-emitting diodes with a pulse duration of 10 nanosec, a front of 5 nanosec,
and a maximum voltage of 35 V. 3 ill. 6 ref. Yu.M.

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USSR

UDC 621.374.33

ZAVODCHIKOV, S. A., LETIN, I. A.

"A Selector of Pulse Sequences"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obratzy, tovarnyye znaki, No 11, Apr 71, Author's Certificate No 299024, division H, Filed 3 Nov 69, published 16 Mar 71, p 189

Translation: This Author's Certificate introduces a selector of pulse sequences which contains two series-connected slave multivibrators with controllable output pulse duration for two-stage delay. The selector also contains a gating pulse shaper whose input is connected to the output of the slave multivibrator for the second delay stage, while the output of the gating pulse shaper is connected to one of the inputs of a coincidence circuit whose other input is connected to the input of the device. The unit also contains a differentiating RC network. As a distinguishing feature of the patent, the device is designed for selecting pulses with a predetermined repetition frequency and eliminating parasitic selection of pulses with a frequency which is a multiple of the chosen frequency. The common tiepoint of the capacitor and resistor in the differentiating

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USSR

ZAVODCHIKOV, S. A., LETIN, I. A., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 11, Apr 71, Author's Certificate No 299024, division II, filed 3 Nov 69, published 16 Mar 71, p 189

RC network is connected to the control circuit of the slave multivibrator for the second delay stage. The differentiating RC network is connected to the input of the device.

2/2

- 61 -

1/2 016 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--COLORIMETRIC METHOD FOR THE QUANTITATIVE DETERMINATION OF URIC ACID
IN THE BLOOD -U-
AUTHOR--LETKINA, N.P. L
CCOUNTRY OF INFO--USSR
SOURCE--LAB. DELO 1970, (2), 102-5
DATE PUBLISHED--70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--COLORIMETER, BLOOD, URONIC ACID, URINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3001/1798 STEP NO--UR/9099/70/000/002/0102/0105
CIRC ACCESSION NO--AP0127212

UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0127212

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A METHOD FOR THE DETN. OF URIC ACID (I) IN THE PRESENCE OF OTHER N CONTG. COMPODS. PRESENT IN THE BLOOD IS DESCRIBED. AFTER PPTN. OF PROTEINS BY A CD REAGENT, THE METHOD OF N. P. LETKINA, ET AL., (1964) USING PHENOLHYPOCHLORITE FOR THE DETN. OF I WAS USED. FACILITY: VITEBSK. MED. INST., VITEBSK, USSR.

LETKOVA, L.I.

JRS 57577
15700722

- 120 -

Rheography as a method for studying the cardiovascular system has been used in clinical practice and experimental investigation. In such experiments the method has been used to study the changes in the state of the cardiovascular system in various conditions. In these cases when the circulation is in a stationary state of equilibrium, the changes in the state of the cardiovascular system are observed and accordingly with rapidly changing changes in the state of the cardiovascular system (such as in experiments on a centrifuge) the most accurate observation of processes occurring in the cardiovascular system is obtained. In blood filling in parts of the body situated under conditions of dynamic pressure (for studying hemodynamic reactions in this situation. This makes it possible to evaluate the changes in several vascular zones simultaneously to compare the results.

In this article we will give a detailed analysis of the results obtained in the study of the changes in the state of the cardiovascular system in various conditions in a centrifuge.

The experiments were conducted on a centrifuge with a radius of 0.5 m. The rheogram was registered using an original 6-channel rheographic system designed by S. L. Gorbachuk and M. A. Roman. The rheogram was recorded directly in the centrifuge cabin because the great length of a recording line between the centrifuge cabin and the recording apparatus (3-4 m) adversely affects the quality and increases circuit capacitance resistance, which results in a considerable effect on power transfer and shape of the signal. The results of the rheogram signal with a 13-channel electroencephalograph manufactured by the Japanese Sanei firm with a rate of paper movement 30 mm

Article by V. B. Zubov, L. I. Letkova, V. A. Alievskaya and M. A. Roman. Rheography as a method for studying the cardiovascular system in a centrifuge. Journal of Applied Physiology, Moscow, 1972, Vol. 33, No. 1, pp. 75-79. Submitted for publication 17 December 1971.

USSR

UDC 681.142:621.391.15

KALABEKOV, B.A., LETNIK, L.A.

"Effectiveness Of Methods Of Digital Compression And Expansion"

Elektrosvyaz', No 3, Mar 1972, pp 73-78

Abstract: Some principles of construction are considered of nonlinear digital converters intended for use as compressing and expanding devices. Two methods of digital compression are discussed: with and without a selection of digits for recording of the sign of the quantization increment. A calculation is made of the parameters of the converters. An evaluation is presented of the advantages obtained by use of these methods with unequal quantization increments. 5 fig. 6 ref. Received, 10 Nov 70.

1/1

- 45 -

USSR

UDC 521.375.92

LETOKHIN, V. S., Academy of Sciences of the USSR

"Laser Action in Stellar Atmospheres"

Preprint No 9, Institute of Spectroscopy, Moscow, 1972, 24 pp (with summary in English), RZh-Fizika, No 9, Sep 73, Abstract No 9D706

Translation: The possibility of generating radiation by transitions in the visible light band in natural objects is considered. The most likely locations are the atmosphere of stars, in which conditions similar to the plasma of a gas laser are established in a mixture of inert gases and some kind of element at low pressure. It is shown that some anomalously bright emission lines in the spectra of stars can be explained as the result of forced radiation in the stellar atmosphere due to the inversion of the population of optical transitions. A number of examples of lines of anomalous intensity in the spectra of stars are cited and an explanation of these anomalies on the basis of forced radiation is given.

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USSR

UDC: 621.375.82

GOLGER, A. L., LETOKHOV, V. S.

"Population Inversion During Absorption Saturation by Rotational-Vibrational Transitions of Molecules"

Moscow, Kvant. elektronika--sbornik (Quantum Electronics--collection of works), No 1(13), "Sov. radio", 1973, pp 30-40 (from RZh-Fizika, No 8, Aug 73, abstract No 8D1007 by the authors)

Translation: A theoretical examination is made of the possibility of producing population inversion in absorption saturation of the fundamental oscillation by optical resonance pumping for the case in which equilibrium is maintained with respect to the rotational sublevels of molecules. It is shown that pumping in a single line alone produces emission with relatively low energy loss (by the magnitude of a rotational quantum) on a large number of rotational-vibrational lines. The coefficient of absorption (gain) in P-, Q- and R-lines is considered as a function of the species and number of the line which is resonant with pumping and of the value of the rotational gas constant. As an example, the authors calculate the coefficient of amplification (absorption) of gaseous HF by the $1 \rightarrow 0$ transition of the HF molecule

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USSR

GOLGER, A. L., LETOKHOV, V. S., Kvant. elektronika, "Sov. radio", 1973, pp 36-40

with pumping in the P-line. It is shown that at 300° Kelvin and a pressure of 10 mm Hg for HF and 200 mm Hg for the buffer gas, pumping in line P(0) in HF can give a coefficient of amplification on the order of 0.5 cm^{-1} . Bibliography of 12 titles.

2/2

- 35 -

USSR

AMBARTSUMYAN, R. V., LETOKHOV, V. S., MAKAROV, G. N., PLATOVA, A. G.,
PURETSKIY, A. A., and TUMANOV, O. A.

"Investigating the Excitation of Oscillatory Levels in $N^{14}H_3$ by Radiation
of a CO_2 Laser"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, No 3, 1973, pp
771-784

Abstract: The difficulty in the way of developing a precise explanation of the processes leading to the dissociation and chemical reactions of molecules excited by infrared radiation is the result of the paucity of effective methods for investigating the oscillatory state. In this paper, a direct method is developed for studying the population of oscillatory molecule levels from the intensity of the absorption lines in molecular transitions from the oscillatory state to the excited electronic state. Experiments for studying the population change of oscillatory levels in the NH_3 molecule under the excitation of a CO_2 laser are described, and a diagram of the experimental apparatus is given together with an explanation of its operation. The electron-oscillatory transmission spectrum of ammonia in the 2000-1250 Å range with and without the laser is produced. The theory of the phenomenon is developed and its results compared with the experimental results.

1/1

- 54 -

USSR

AMBARTSUMYAN, R. V., LETOKHOV, V. S., MAKAROV, G. N., PURETSKIY, A. A.,
Institute of Spectroscopy, Academy of Sciences of the USSR

"Laser Separation of Nitrogen Isotopes"

Moscow, Fis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 17,
No 2, 20 Jan 73, pp 91-94

Abstract: A report is given on the first highly effective separation of isotopes by the method of selective, two-stage photodissociation of molecules. In the described experiments, nitrogen isotopes ^{14}N and ^{15}N were separated in photodissociation of ammonium molecules $^{14}\text{NH}_3$ and $^{15}\text{NH}_3$. The method was proposed by Ambartsumyan and Letokhov (IEEE J. Quant. Electr., QE-7, 305, 1971; Appl. optics, 11, 354, 1972) as a procedure for selective action of radiation on matter and consists in the following: Monochromatic emission of frequency ν_1 selectively excites oscillatory transition of molecules of only one isotopic composition. The molecules are simultaneously exposed to light of frequency ν_2 whose quantum energy is sufficient for photodissociation of only the vibrationally excited molecules. A diagram of the experiment is given and explained.

1/1

USSR

LETOKHOV, V. S., RYABOV, Ye. A., and TUMANOV, O. A. (Institute of Spectroscopy, USSR Academy of Sciences)

"Molecular Gas Luminescence Induced by a CO₂ Laser Pulse"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, December 1972, pp 2025-2032

Abstract: Ultraviolet and visible luminescence induced by radiation from a CO₂ laser is investigated in NH₃ and C₂F₃Cl gases absorbing the radiation. The luminescence is found to be of a threshold nature. The dependence of the threshold on gas pressure and dependence of luminescence intensity on intensity of the CO₂ laser pulse are measured. It is found that luminescence is produced without any delay with respect to the laser pulse. The role of vibrational heating of molecules by the laser pulse with subsequent dissociation and light emission by the decay products and also other possible mechanisms of luminescence production are discussed.

1/1

USSR

UDC 535.2

LETOKHOV, V. S., and PAVLIK, B. D.

"Nonlinear Absorption of Separated Light Beams in Doppler-Broadened Transition. II. High Field"

Leningrad, Optika i Spektroskopiya, Vol 32, No 6, Jun 72, pp 1057-1062

Abstract: The article considers in theoretical terms the resonance interaction of two spatially separated light beams of the same frequency with a Doppler-broadened absorption line in the case of strong saturation without any limitation on the amplitudes of the fields in the beams. It is shown that a narrow resonance dip in the line center remains in the case of counter-beams and there is an interference dependence of absorption on the phase difference between the fields in the case of parallel beams. The authors thank N. G. BASOV for his support of the present work and A. T. MATACHEUN for assisting in the calculations.

1/1

USSR

AMBARTSUMYAN, R. V., APATIN, V. M., and LETOKHOV, V. S.

"Selective Laser Excitation of High Oscillating Levels of HCl Molecules"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 6,
20 Mar 72, pp 336-339

Abstract: This article reports the first successful experiments in direct, selective laser excitation of the third oscillating level of the HCl molecule ($E_{ex} = 1.04$ eV) with absorption of the laser radiation at the second oscillating overtone of the molecule. The extremely high selectivity of this process allowed molecules with predetermined isotopic composition to be excited. The experiment consisted in selective optical pumping of the HCl molecule in the oscillating band $v = 0 \rightarrow v = 3$ by the radiation of a powerful laser with frequency tuned to the near IR area and detection of the excited molecules by means of their IR luminescence in the oscillating transitions $v = 3 \rightarrow v = 2$ and $v = 2 \rightarrow v = 1$. The dependence of the luminescence intensity-pumping intensity ratio on pumping wavelength was measured. This method of selective excitation of higher oscillating levels of HCl molecules of predetermined isotopic composition allows selective chemical reaction of molecules having excess oscillating energy of about 1 eV with other atoms and

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USSR

AMBARTSUMYAN, R. V., et al., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 15, No 6, 20 Mar 72, pp 336-339

molecules, as well as selective photodissociation of excited molecules, the red boundary of photoabsorption of which is shifted by $8,000-9,000 \text{ cm}^{-1}$.

2/2

USSR

UIN 621.573.029.7

LETOKHOV, V.S., PAVLIK, B.D.

"Connection Of Lasers With A Nonlinear Absorber In The Presence Of Transfer Phenomena In A Molecular Gas"

Radiotekhnika i elektronika, Vol XVII, No 5, May 72, pp 1050-1058

Abstract: A new type of connection of gaseous lasers is considered. Connection of the lasers is accomplished by means of absorbing molecules which intersect both beams. The effect of such molecular connection is of importance for synchronization of a large number of long-wave gaseous lasers with the object of decreasing their dispersion, and also for study of the effect of weak collisions on the width of the "trough" which is transferred by absorbing molecules from one laser beam to the other. 3 fig. 13 ref. Received by editors, 6 April 1971.

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- 142 -

USSR

BASOV, N. G., KOMPANETS, O. N., LETOKHOV, V. S. and NIKITIN, V. V.
Physics Institute imeni P. N. Lebedev, Academy of Sciences, USSR

"Investigating Narrow Resonance Within the Dopler Line of Rotational-Oscillating Transitions of the SF_6 Molecule during Absorption Saturation"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, Vol 59, No 2(3), 1970, pp 394-403

Abstract: Experimental measurement was made of the amplitude and width of narrow resonances within the Dopler line of rotational-oscillating transitions of the SF_6 molecule during the saturation of adsorption of a quasi-travelling wave from a CO_2 laser. The object of the experiment was to demonstrate the possibility of spectroscopy within the Dopler line by means of absorption saturation of a quasi-travelling wave. The effects of resonance widening were determined for the first time. The experimentally obtained large peak amplitude, along with its narrow width demonstrated the usefulness of the method for stabilizing the CO_2 laser frequency. The properties of a nonlinear spectroscope with a quasi-travelling wave are analyzed.

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USSR

UDC: 621.373:530.145.6

LETOKHOV, V. S., PAVLIK, B. D.

"A Gas Laser With Nonlinear Absorption in the Quasi-Traveling Wave Mode"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), No 1, Moscow, 1971, pp 53-63 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5D186)

Translation: The paper presents a theoretical analysis of a gas laser with nonlinear saturation operating in the quasi-traveling wave mode under conditions of strong saturation of absorption, i. e. in a mode such that one traveling wave of frequency ν (forward wave) is strong, absorption-saturating, while the backward wave is weak and interacts linearly with the medium within the limits of the uniform width of the line on the mirror-symmetry frequency $2\omega_b - \nu$. Just as in the case of a standing wave in a resonator, emission power in the quasi-traveling wave mode increases resonantly ("power peak"), and the emission frequency is strongly pulled toward the center of the absorption line ω_b ("Self-stabilization effect"), when the field frequency ν passes through the center of the absorption line ω_b . It is shown that the emission mode of a quasi-traveling wave in the cavity, in contrast to the conventionally used standing wave mode, makes it possible to achieve higher power peaks

1/2

USSR

LETOKHOV, V. S., PAVLIK, B. D., Kvant. elektronika, No 1, Moscow, 1971, pp 53-63

and appreciable self-stabilization factors even in the case of deep saturation of absorption and a strong difference between the parameters of saturation of the amplifying and absorbing media. In principle, this means that the so-called absolute frequency self-stabilization mode can be achieved where nonlinear frequency pulling within the power peak is retained in the case of detuning of the cavity frequency at a distance equal to the interval between the active modes of the Fabry-Perot resonator. The conditions for this mode are determined, and a specific example of a CO₂ laser with absorption cell filled with SF₆ is considered. Three illustrations, bibliography of eighteen titles. Resumé.

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Acc. Nr: **AP0043665**

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 2, pp 44/-455

INVESTIGATION OF THE EMISSION SPECTRUM
OF A He — Xe LASER WITH NONRESONANT FEEDBACK

Ambartsumyan, R. V.; Bazhulin, S. P.;
Basov, N. G.; Letokhov, V. S.

The emission spectrum of a continuously operating He — Xe laser ($\lambda = 3.51$ microns) is experimentally investigated from the viewpoint of obtaining nonresonant feedback operating conditions. Two types of cavities are investigated: 1) a system consisting of a scatterer and mirror and 2) a system of two spherical mirrors with a scatterer between them. Operation conditions with nonresonant feedback are obtained in a laser with a quasiconcentric cavity and a scatterer. The generation frequency in this case could be maintained in the vicinity of the maximum of the amplification line with an accuracy to ± 1 Mc/s. irrespective of variation of the geometrical size of the laser. In conclusion the possibility of feedback due to resonance scattering on the amplifying particles themselves is considered.

REEL/FRAME
19770069

21 DI

LETOV, A. M.

UDC: 62-50

NEW PROBLEMS AND METHODS OF CONTROL

[Article by Corresponding Member of the AS USSR A. M. Letov;
Moscow, Vsesoyuznyi Nauchnyi Tsentr SSSR, Russian, Vol. 41, No. 10,
October 1971, pp. 23-27]

The science of control is an aggregate of methods which permit substantiating a decision adopted in order to achieve a previously posed goal under the conditions of a well or poorly defined situation.

It can be said that the science of decision-making arose long ago. Let us recall even the description of the "problem of decision-making" in the Russian fairy, then the hero had to select one of three roads, examine it in different directions, for the selection a payment was named; if you go to the right, you will lose a friend; if you go to the left, a horse, and if you go forward, you will ruin your life. The most interesting moment in that account is the naming of the payment for adopting a decision, and an irreplaceable and very important element of any problem of control of the present time, where science must point out a way to solve it, the payment for which is minimal.

Although the activity of control deals with all aspects of the life and activity of man, there arose of it which are connected with problems in making decisions in engineering, in industry, and economics with respect to investment, in agriculture, in the most developed, when we encounter these problems now, in army of highly qualified mathematicians, who make a well developed mathematical apparatus and large-capacity computers, come to the rescue.

The ever-increasing flow of publications on the theory of optimal control, gives rise to the question, has man really comprehensively mastered the science of control, and does it remain only to translate its methods into the language of precise or

- 29 -

UDC 62-50

10 Dec 1971

1/2 012 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--CERTAIN UNSOLVED PROBLEMS OF AUTOMATIC CONTROL THEORY -U-
AUTHOR--LETOV, A.M.
COUNTRY OF INFO--USSR
SOURCE--DIFFERENTIAL'NYE URAVNENIYA, VOL. 6, APR. 1970, P. 592-615
DATE PUBLISHED--APR70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., MATHEMATICAL SCIENCES
TOPIC TAGS--AUTOMATIC CONTROL THEORY, ASYMPTOTIC METHOD, CONTROL SYSTEM
STABILITY

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0260 STEP NO--UR/03T6/70/006/000/0592/0515
CIRC ACCESSION NO--AP0124022
UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0124022

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. DESCRIPTION OF CERTAIN UNSOLVED PROBLEMS OF AUTOMATIC CONTROL THEORY, FORMULATED ON THE BASIS OF THE REQUIREMENTS OF THE CHIEF ENGINEER WITH RESPECT TO HIS PRODUCT. THE PROBLEM OF SYNTHESIZING ASYMPTOTICALLY STABLE SYSTEMS IS DISCUSSED, AND A DESCRIPTION IS GIVEN OF THE CHIEF ENGINEER'S POINT OF VIEW WITH RESPECT TO PRODUCT DESIGN AND THE ROLE TO BE PLAYED BY CURRENT THEORY IN THIS PROCESS. A METHOD OF SOLVING THE PROBLEM OF SYNTHESIZING ASYMPTOTICALLY STABLE CLOSED SYSTEMS IS OUTLINED, AND A SITUATION LEADING TO THE FORMULATION OF SO CALLED MIXED PROBLEMS OF OPTIMAL CONTROL THEORY IS DESCRIBED.

UNCLASSIFIED

1/2 052 UNCLASSIFIED PROCESSING DATE--21NOV70
TITLE--SYNTHESIS OF A SET OF ADMISSIBLE CONTROLS PROVIDES ASYMPTOTIC
STABILITY FOR A MAN MADE SATELLITE -U-
AUTHOR--LETOV, A.M.
COUNTRY OF INFO--USSR, FRANCE
SOURCE--3RD IFAC SYMPOSIUM ON SPACE CONTROL, TOULOUSE, FRANCE, MARCH 1970
DATE PUBLISHED-----70
SUBJECT AREAS--SPACE TECHNOLOGY, NAVIGATION
TOPIC TAGS--ASYMPTOTIC PROPERTY, CENTER OF GRAVITY, ARTIFICIAL EARTH
SATELLITE, SPACECRAFT CONTROL, SATELLITE STABILITY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3009/0230 STEP NO--FR/0000/70/000/000/0000/0000
CIRC ACCESSION NO--AT0139086
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0139086

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MATHEMATICAL APPROACH TO THE SYNTHESIS OF A SET OF ADMISSIBLE CONTROL WHICH PROVIDES ASYMPTOTIC STABILITY CLOSED LOOP SYSTEM IS DESCRIBED. THE METHOD OF SOLUTION IS APPLIED TO STABILIZATION OF A SATELLITE. THE CENTER OF GRAVITY OF THE SATELLITE IS ALLOWED TO MAKE ANY ORBITAL MOVEMENT, AND THE PRINCIPAL AXIS MAY HAVE ANY DEVIATIONS FROM THE DESIRED POSITION.

UNCLASSIFIED

USSR

LETOV, A. M. (Moscow)

"Status and Prospects for Development of Control Theory"

Moscow, Avtomatika i Telemekhanika, September 1972, pp 12-22

Abstract: The paper describes the present state of control theory from the standpoint of two basic problems: programmed control ensuring the achievement of a specified objective, and the synthesis of feedback laws whose application would make possible the actual execution of an established program. It is shown that the theory of large-scale control systems can be applied equally to both problems; concepts and methods of systems analysis should be used in studying these systems.

The design of an agricultural center which would supply two cities is used as an illustration. The example clearly reveals the close relation existing between the concept of continuous controls fitting the maximum principle of L. S. Pontryagin and discrete controls determined by operations research techniques.

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USSR

LETOV, A. M., *Avtomatika i Telemekhanika*, September 1972, pp 12-22

Mathematical simulation of such large-scale systems and the formulation and solution of problems of their control are shown to be the most promising and important directions for the development of control theory.

The article includes 24 equations. There are 19 bibliographic references.

2/2

- 28 -

LETON, G.S

Zoology
Epidemiological
Station

7 December 1971

UIC 59 616,981,452-615,0036,21(90-3
NATIONAL ENDOWMENT IN ASSISTANCE OF FLORIP
FUNDATION IN SYDNEY

The zone of natural plaque foci in Kazakhstan is to western Siberia is principally confined to the steppes that have not been subjected to the steppes reclamation. The plaque blooms are formed under the effects of a dry, severely continental climate. Plaque epizootics progress widely in the arid spring season. Siberian and Kazakh steppes, a sharp sides with the emergence of the plaque epizootics with the development of the plaque epizootics. Plaque epizootics occur in the steppes of Kazakhstan, optimum living conditions for plaque epizootics are one of the pre-requisites for epizootic activation.

There is great epidemiological significance to clarifying the natural reservoir in the activation of an epizootic caused by alien in plague foci. As long as at 1935 Khabarovsk considered drugs as possible prerequisites to the introduction of plague epizootics among tabudags (transliteration) (Marinka sibirica, 2), 17 Not long ago Yamanov returned to this hypothesis, 18, 20. The suggested point of view on drugs was used also by Nekipelov in trying to explain the active course of plague in Mongolia and the Transbaikian as a function of droughts, 19.

There is no doubt that in studying the effects of particular environmental factors on the course of epizootics, the indirect action of such factors through plaque carriers and vectors is most accessible to analysis. This approach was

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UDC 539.374

AKSEL'RAD, E. L., LETOV, I. A., Leningrad

"Geometrically Nonlinear Axisymmetrical Deformation of Toroidal Shells"

Kiev, Prikladnaya Mekhanika, Vol 9, No 6, Jun 73, pp 31-40.

Abstract: The stress and deformation state of toroidal shells is studied using solution of the Meissner equations in trigonometric series by a matrix method. Geometrically nonlinear deformation of circular, elliptical and toroidal shells is studied, as well as shells with local initial meridional irregularities. A formula is suggested for estimation of the influence of geometric nonlinearity on the bending stresses. An engineering calculation method not requiring the use of a computer is developed for closed toroidal shells on the basis of the Meissner equations.

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USSR

UDC 620.197.5

LETSKIKH, YE. S., KOMORNIKOVA, A. G., KNYAZHEVA, V. M., HICLOTYRKIN, YA. M.

"Anodic Protection of Titanium in Solutions of Chromic Chloride Containing Chromous Chloride"

Moscow, Zashchita Metallov, Vol 6, No 6, Nov-Dec 70, pp 635-639

Abstract: The possibility of anodic protection of titanium as applied to the technological process conditions of obtaining chromic chloride based on the solution of its hydroxide in hydrochloric acid is discussed. It is shown that anodic protection permits a significant increase in the corrosion resistance of titanium in solutions of chromic chloride containing a reducing agent -- chromous chloride. The losses of chromous chloride resulting from anodic oxidation do not exceed the process requirements.

The experimental procedure and results are described in detail. It was found that introduction of chromous chloride into a solution of chromic chloride greatly reduces the corrosion resistance of titanium as a result of shifting the stationary potential from the passive region to the transient region.

The titanium solution rate is defined as a function of the potential in the chromic chloride solution containing chromous chloride. When using anodic protection of the titanium the corrosion resistance of the titanium can be 1/2

USSR

LETSKIKH, YE. S., et al., Zashchita Metallov, Vol 6, No 6, Nov-Dec 70, pp 635-639

increased by 30 times. It is established that the basic anodic process in titanium in the passive region is oxidation of Cr^{2+} , the rate of which is approximately two orders higher than the titanium solution rate. However, the expenditures on electric power are low in the case of anodic protection. They do not go beyond the technological process requirements on the losses of Cr as a result of anodic oxidation. A significant increase in the titanium solution rate was also detected in the passive region in the presence of the reducing agent (Cr^{2+}).

2/2

USSR

BOZHANOV, E. S., LETSKIY, E. K.

"Application of the Method of Stochastic Approximation for Processing of Large Files of Information"

Izbr. Tr. Vses. Mezhvuz. Simpoz. po Prikl. Mat. i Kibernet, Gor'kiy, 1967 [Selected Works of All-Union Interdepartmental Symposium on Applied Mathematics and Cybernetics, Gor'kiy, 1967], Moscow, Nauka Press, 1973, pp 143-146 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V236, by the authors).

Translation: The problem is studied of constructing an approximating polynomial of power n with respect to N realizations of the function $y(x_1, x_2, \dots, x_k)$. The use of a computer algorithm from the method of least squares to estimate the coefficients of the approximating function requires on the order of n^3 calculations. It is demonstrated that when the problem is solved using a sequential computation procedure and the required accuracy of solution is limited, the number of computations required is on the order of $n^{5/2}$.

1/1

- 23 -

1/2 008
UNCLASSIFIED
TITLE--ADAPTIVE SYSTEM OF TRACING VARYING PARAMETERS OF CHARACTERISTIC OF
FUNCTION GENERATION -U-
AUTHOR--LETSKIY, E.K.
COUNTRY OF INFO--USSR
SOURCE--AVTOMATIKA I TELEMKHANIKA, 1970, NR 2, PP 43-49
DATE PUBLISHED-----70
SUBJECT AREAS--MATHEMATICAL SCIENCES
TOPIC TAGS--ALGORITHM, ITERATION, FUNCTION ANALYSIS, FUNCTIONAL EQUATION,
STOCHASTIC PROCESS
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1983/1917
STEP NO--UR/0103/70/000/002/0043/0049
CIRC ACCESSION NO--AP0054718
UNCLASSIFIED

2/2 008
CIRC ACCESSION NO--AP0054718

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ITERATIVE ALGORITHM OF TRACING THE FUNCTIONAL GENERATOR PARAMETERS VARYING STOCHASTICALLY IS CONSIDERED. THERE IS OBTAINED THE CONDITION OF THE CHOICE OF THE CORRECTION STEP GAMMA THE FULFILMENT OF WHICH IS NECESSARY IN THE REPRODUCTION OF THE PROCESS OF THE VARIANCE OF THE GENERATOR PARAMETERS. THERE IS OBTAINED THE EXPRESSION FOR THE SQUARED VALUE OF THE ERROR OF TRACING WHICH ALLOWS TO DETERMINE THE OPTIMAL CORRECTION STEP. THERE IS CONSIDERED THE ALGORITHM OF THE AUTOMATIC ADJUSTMENT OF THE GAMMA PARAMETER IN THE PROCESSES OF THE SYSTEM FUNCTIONING, THE ALGORITHM BASED ON THE APPLICATION OF THE PROCEDURE OF STOCHASTIC APPROXIMATION.

UNCLASSIFIED

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USSR

LETUNOV, S., Professor

"The Secret of Endurance"

Moscow, Izvestiya, 1 Aug 70, p 5

Abstract: Endurance is defined as the individual resistance of man to oxygen insufficiency. While endurance is essentially a hereditary characteristic, it can be acquired and developed by training, by systematic exercise tailored to the health, age, and occupation of the individual. Exercise is equivalent to drugs used in the treatment of chronic coronary disease and myocardial insufficiency, except that its effect lasts much longer. Summarizing the results of an exercise program in which 100 elderly persons participated, it was noted that 30% complained of shortness of breath and pain in the heart while walking or climbing even a single flight of steps before the program was started, but a year later only 19% voiced such complaints. The number dwindled to only 4% after five years.

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UDC: 681.325.6

USSR

GERASIMOV, V. F., KUZIN, L. T., LETUNOV, Yu. P., CHERNYAYEV, V. V., Moscow
Engineering Physics Institute

"A Device for Simulating the Random Distribution of Priorities in Queueing Systems"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 27, 1970, Soviet Patent No 280064, Class 42, Filed 28 May 69, p 133

Abstract: This Author's Certificate introduces: 1. A device for simulating the random distribution of priorities in queueing systems. The device contains groups of diodes and delay lines and an interrogation flip-flop. As a distinguishing feature of the patent, the functional possibilities of the device are extended by using a (1-n)-terminal network in the form of series connected kipp oscillators with variable time delay, the outputs being connected to the controlling inputs of the diodes in the channels. The controlling input of the (1-n)-terminal network is connected to the one state of the interrogation flip-flop, which determines the priority of an application. 2. A modification of this device distinguished by the fact that provision is made for functional readjustment of the probability (1-n)-terminal network by using channel flip-flops whose "zero" outputs are connected to the controlling inputs of the

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USSR

GERASIMOV, V. F., et al, Otkrytiya, Izobreteniya, Promyshlennyya Obratzsy, Tovarnyye Znaki, No 27, 1970, Soviet Patent No 280064, Class 42, Filed 28 May 69, p 133

corresponding kipp oscillators, while the "one" outputs are connected to the controlling inputs of the diodes connected to the inputs of diodes tied to the following kipp oscillators in the circuit. 3. A modification of this device distinguished by the fact that provision is made for functional coupling to the channels connected to the device. The inputs are connected through a shaper amplifier and a delay line to the "zero" inputs of the corresponding channel flip-flops and to the "one" input of the interrogation flip-flop, and through diodes to the "one" inputs of the channel flip-flops and to the "zero" output of the interrogation flip-flop, and also through a resistor to the voltage supply. 4. A modification of this device distinguished by the fact that provision is made for determining whether channels are free (busy). The output of the channel diodes is connected to the delay line, and the output of the delay line is connected to the main channel diode output.

2/2

- 100 -

UDC: 576.8.095.332

USSR

KOVAL'SKIY, V. V., LETUNOVA, S. V., and ALTYNBAYEVA, R. D., Biogeochemical Laboratory, Institute of Geochemistry and Analytical Chemistry named V. I. Vernadskiy, Academy of Sciences USSR, Moscow

"Genetic Transformation of Resistance to Selenium and Formation of Selenoreductase by *Bacillus megatherium*"

Moscow, Doklady Akademii Nauk SSSR, Vol 194, No 6, 1970, pp 1429-1432

Abstract: A study was made of two *B. megatherium* strains: strain 8, isolated from soil with a high selenium content (Tuva ASSR) and adapted to excess Se under natural conditions; and strain 101, isolated from soil with a low Se content (Moscow Oblast) and adapted to this concentration. It was found that strain 8 grown on Czapek's medium without Se reduces selenite upon subsequent incubation with selenite. Selenoreductase is invariably found in strain 8, regardless of the presence of Se in the nutrient medium. Strain 101 produces selenoreductase only when grown on a medium with Se. In an attempt to transform the low resistance to Se and selenoreductase activity in strain 101, DNA isolated from strain 8 (donor) was added to a medium with strain 101 (recipient). Cultures of transformants resistant to high concentrations of Se were obtained in the medium after 1/2

- 18 -

UDC 631.46

USSR

KOVAL'SKIY, V. V., LETUNOVA, S. V., and YERMAKOV, V. V., Institute of Geo-chemistry and Analytical Chemistry imeni V. I. Vernadskiy

"Artificial Change in Adaptation of Bac. megatherium to the Natural Selenium Content of Soil"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, No 1, 1970, pp 72-76

Abstract: Repeated passaging of Bac. megatherium strains 29 and 101 (isolated from soil with a low selenium content in Moscow Oblast') on Czapek's medium with a selenium content 10 times higher than the concentration optimum for the freshly isolated strains caused adaptation of these strains to the new high selenium level. Similarly, Tuva strains 9 and 20 (isolated from soil with a high selenium content) adapted quickly (after 5-15 passages) to Czapek's medium with a low selenium content. A third Tuva strain (8) was resistant to a lower level of selenium in the medium. One of the possible mechanisms of adaptation of Bac. megatherium to high selenium concentrations may be the appearance of the induced adaptive enzyme Se-reductase, which reduces soluble selenium compounds and converts them to a form unavailable for microorganisms and inactive in the cells.

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USSR

UDC 577.4:576.851.5

L
LETUNOVA, S. V., KOVAL'SKIY, V. V., and ROMANOVA, S. N., Biogeochemical Laboratory, Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy, Academy of Sciences USSR

"Geochemical Ecology of Microorganisms Under Conditions of Different Uranium Content in Mud"

Moscow, Zhurnal Obshchey Biologii, Vol 31, No 1, 1970, pp 111-120

Abstract: Strains of *Bac. megatherium*, *Bac. mesentericus*, *Bacterium* sp., and *Mycobacterium* sp. were isolated from the mud of Lake Issyk-Kul' with a high U content (1.5×10^{-3} percent) and from the mud of a lake in the vicinity of Moscow with a low U content (5.0×10^{-5} percent). The microorganisms were grown on culture media with a varying U content. Strains from Lake Issyk-Kul' and from the Moscow lake accumulated U during growth. For Issyk-Kul' strains adapted to a medium with a high U content, accumulation of U in the medium (Czapek is medium containing varying amounts of uranyl acetate) was accompanied by an increase in the rate of growth. The opposite was true for strains of the same genus isolated from the mud of the Moscow lake; with an increased accumulation of U in the cells, the rate of growth decreased.

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Acc. Nr:

AP0046550

Ref. Code: UR 0216

PRIMARY SOURCE: Izvestiya Akademii Nauk SSSR, Seriya Biologicheskaya, 1970, Nr 1, pp 72-76

V. V. KOVAL'SKIY, S. V. LETUNOVA, V. V. YERMANOV

ARTIFICIAL ALTERATION OF BAC. MEGATERIUM ADAPTATION TO NATURAL SELENIUM CONTENTS IN SOIL

I. V. Vernadski Institute of Geology and Analytical Chemistry

Cultivation of two Bac. megaterium strains (29 and 101) isolated from soils with low selenium contents (Moscow region) in media with higher concentrations of this element (5 g) per 100 cc) causes adaptation of this micro-organism to these concentrations. The adaptation is revealed by a shift of growing cultures regarding higher selenium concentration in contrast to freshly isolated strains. On the other hand Bac. megaterium strains 9 and 20 which had been isolated from soils rich in selenium (Tuva SSR) contents were adapted to lower selenium concentrations in the medium.

In the instance of the Tuva strain 8 no shift of the growth maximum relative to low selenium concentrations in the medium could be obtained. The latter organism remains resistant to a decrease of selenium in the medium.

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LETYAGIN, V.A.

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temperatures from attenuates exponentially with time and does not affect the stress wave motion. After passage of the elastic-wave front, a field of quasi-static stresses is established.

Dokl. Akad. Nauk SSSR, 1972, 231, no. 5, 1072-1074.
V. S. Solov'ev. Experimental investigation of shock wave attenuation
Zh. tekh. fiz., no. 2, 1972, 101-104.

Shock wave attenuation in steel specimens from the contact blast of a plane-wave in high charges, with a 50 mm diameter and 10 mm height, was studied experimentally. Monotonic attenuation of the maximum shock-compression pressure was observed at increasing distances from the contact surface. Shock wave attenuation was caused by a relief which overtook the shock waves from the direction of the charge. The propagation rates of the primary and secondary shock waves were computed using the known shock-wave velocity and the experimentally obtained time intervals between the emergence of the waves to the free surface of variable thickness plates. The experiments show that up to a thickness of $x_1/2\pi l, 3.5$ (x_1 - specimen thickness; l - charge height) the shock waves propagated in steel in three stages, and thereafter degenerated into a two-stage form.

Zak, M. A. Geometric shock waves in an anisotropic elastic body. MIT, no. 3, 1972, 161-162.

An investigation is made of a quasi-linear hyperbolic system of equations for wave propagation in an elastic anisotropic medium. Surface wave front equations of motion are derived and

UDC 681.178.9

USSR

KASHchEYEV, A. M., KISELEV, V. M., LETYaGIN, Yu. V., NOVIKOV, Y. A.,
ROZANOV, Ye. V., ROZENKRANTS, Yu -K. V. and SHAPIRO, B. I.

"A Device for Recording Pulse Signals"

USSR Author's Certificate, Class G Ol d 9/36, G 06 m 3/00, No 334478, filed
25 Dec 70, published 23 May 72 (from RZh-Avtomatika Telemekhanika i Vychislitel'-
naya Tekhnika, No 3, Mar 73, Abstract No 3 A378 F)

Translation: A device is proposed for recording pulse signals, containing
"AND" circuits and an "OR" circuit, the latter attached to a decoder connected
with electromagnetic recording machines. To ensure a quantitative evaluation
of the information recorded over time, a reduction of deviations, and a simpli-
fication of service, the device contains a time code shaper connected directly
and through the control block to distributors attached to the numeric code
sensors, connected in turn to the corresponding AND circuits. The AND circuits
are connected to the OR circuit. The outputs of the time code shaper are con-
nected to the electromagnetic recording machines, and electromagnetic relays
are connected to a pulse group generator. One illustration.

1/1

- 6 -

UDC: 633.51:577.391

USSR

LEUKHINA, T. N. and NAZIROV, N. N., Institute of Experimental Biology of Plants,
Uzbek Academy of Sciences

"Sensitivity of Some Radiomutants of Cotton to Gamma Radiation"

Tashkent, Uzbekskiy Biologicheskii Zhurnal, No 1, 1971, pp 63-64

Abstract: The radiation sensitivity of some cotton mutants with changed or unchanged early ripening of the resulting mutants was studied. It was established that mutants RL and AN-Kattagurgan retain the early ripening characteristics of the initial variants and differ insignificantly from them in the fundamental characteristics of radiation sensitivity: field germinating capacity, survival rate, number of deformed and semisterile plants, and intensity of cell division after gamma-irradiation (10 and 20 curie on a 15 roentgen/second gamma radiation device). The comparative data obtained confirmed the earlier assumption that the properties of radiation sensitivity of different types of cotton are conditioned by the early ripening of these species. Further studies in this area are required to arrive at a final conclusion.

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1/2 022
TITLE--ROUTES OF LYSINE C PRIME14 PENETRATION INTO THE DENTAL ENAMEL OF
DOGS -U-
AUTHOR--LEUS, P.A.
COUNTRY OF INFO--USSR
SOURCE--STOMATOLOGIYA, 1970, VOL 49, NR 2, PP 30-32
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--DENTAL ENAMEL, DOG, CARBON ISOTOPE, TAGGED ATOM, DENTIN,
LYCINE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
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CIRC ACCESSION NO--AP0101741
UNCLASSIFIED
PROCESSING DATE--11SEP70
STEP NO--UR/D511/70/D49/002/0030/0032

UNCLASSIFIED

PROCESSING DATE--11SEP70

2/2 022

CIRC ACCESSION NO--AP0101741

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BY MEANS OF AUTORADIOGRAPHY THE
AUTHOR EXPERIMENTALLY STUDIED THE ROUTES OF PENETRATION OF LYSINE C
PRIME14 INTO DENTAL TISSUES. THE MAIN PERMEABLE STRUCTURES OF DENTAL
ENAMEL ARE ENAMEL LAMELLAE. LYSINE C PRIME14 IN A GREATER QUANTITY IS
INCLUDED INTO THE SURFACE LAYERS OF ENAMEL AND ON THE ENAMEL DENTIN
BORDER.

UNCLASSIFIED

USSR

GIMEL'SHEYN, S. M., LEUS, V. A.

"Synthesis of Three-Dimensional Transfer Mechanisms"

Vychisl. Sistemy [Computer Systems -- Collection of Works], No 50, Novosibirsk, 1972, pp 44-63 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V530, by the author).

Translation: Problems of the application of optimal programming to the task of synthesis of a multiple-link lever mechanism are studied. The problem consists in seeking out values of the parameters of the kinematic system such that the actual dependence of output on input $v = v(u)$ is near piecewise-linear $v = \bar{v}(u)$, as fixed by the set of points $\{u_i, v_i\}$. The output variable is represented in integral form through transfer function K , and the solution to the problem of synthesis is reduced to search for the minimum goal function $F = \sum_{i=1}^n (v_i - \bar{v}_i)^2$ in the parallelepiped of the space of parameters. The deviation in the intervals between fixed points of the piecewise-linear dependence is estimated through the calculated values of the transfer function. A multiple-extreme nature of the goal functions and similar problems. A

1/2

USSR

Gimel'sheyn, S. M., Leus, V. A., Vychisl. Sistemy, No 50, Novosibirsk, 1972, pp 44-63.

gradient linear-step method is used to seek the extreme. Results of calculation are presented for a specific mechanism.

2/2

- 64 -

UDC 681.332.65

USSR

BOYCHENKO, V. M., LEUSENKO, A. Ye., and TOTAYEV, L. T.

"A Random Number Generator With Arbitrary Distribution"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 22, Aug 71, Author's Certificate No 309356, Division G, filed 24 Sep 68,
published 9 Jul 71, p 187

Translation: This Author's Certificate introduces a random number generator with arbitrary distribution containing a generator of uniformly distributed random numbers, a master clock, a digital comparison circuit, and a device for storage of distributions. The output of the generator of uniformly distributed random numbers is connected to one input of the digital comparison circuit, the output of the distribution storage device is connected to the other input of the comparison circuit, and the master clock is connected to the input of the generator of uniformly distributed random numbers. As a distinguishing feature of the patent, speed is increased by installing a logarithmic sorting device between the output of the comparison circuit and the input of the storage device. The second input of the sorting device is connected to the output of the master clock.

1/1

- 170 -